Eco-design

GRI Standards:

302-5: Energy
305-5: Emissions
306-2: Effluent and waste
301-1, 301-2: Materials

PLANET CARE

The connection between the health of our planet and that of people is increasingly clear. Climate change and human-induced environmental challenges (water, soil & air pollution) are one of the main threats to health worldwide leading to the exacerbation of diseases, such as respiratory conditions, cardiovascular diseases, diabetes, and infectious diseases.

As a global healthcare leader, our mission at Sanofi extends beyond developing life-changing medicines and vaccines: it encompasses our contribution to the environment and society. Our ambition is to tackle the impact of environmental challenges on health and health care and we're bridging our key sustainability efforts together to focus on improving equitable access to healthcare, reducing the environmental impact of our activities, and transforming the delivery of care to reduce health systems' environmental footprint.

Through Planet Care, we have charted a clear path forward anchored in innovative actions and measurable goals to not only minimize the environmental impact of our products and activities, but to also adapt our business to the complex climate and nature-related challenges that we face.

With purpose and determination, we are driving a meaningful change that embeds environmental sustainability & adaptation in our day-to-day operations and across our value chain aiming at:

- ***Fighting Climate Change:*** Towards Net Zero in 2045
- ***Limiting our impact on Nature:*** Championing Sustainable Resources Use and Circularity
- ***Innovating with Purpose:*** Environmental Sustainability by Design for our medicines & vaccines through Eco-design
- ***Adapting our business and value chain*** to complex environmental challenges

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1. Our commitments to Eco-design

At Sanofi, we are reimagining the future of healthcare through an Eco-design approach that embeds environmental sustainability at every stage of product's life cycle. Eco-design is an approach that aims to improve our medicines & vaccines' environmental performance by minimizing their environmental impact over their value chain, but to also adapt our environmental profile to the complex climate and nature-related challenges we face.
From 2025, all our new medicines & vaccines adopt an Eco-design approach. We aim to have it embedded across 20 top-selling products by 2030.

Leveraging comprehensive Life Cycle Assessments (LCA), as well as our science-based Eco-design Digital intelligence tool (EDDi), we assess and identify opportunities to reduce environmental impact of our products through their entire lifecycle — namely in terms of raw materials, manufacturing, device and packaging, including distribution, patient use and product end-of-life treatment.

Enriching both our climate & nature ambitions, the Eco-design approach is progressively becoming systemic in development & manufacturing activities, fostering sustainability by design for our medicines & vaccines.

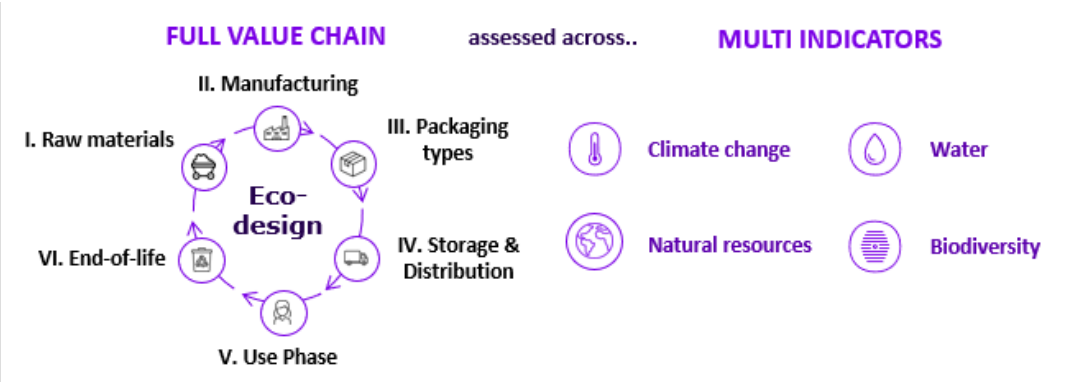

Figure 1 – Sanofi Eco-design approach illustration

A significant number of Eco-design projects are already implemented with this mindset: fostering a sustainable resource use, energy, or water for manufacturing activities, including a proactive approach to minimize the potential impacts on ecosystems of pharmaceuticals in the environment throughout their lifecycle up to improving our supply chain sustainability and finally promoting responsible use & disposal of medicines by patients.

2. Performance

We measure implementation progress of our Eco-design program among others by using these indicators:

- # Life Cycle Assessments (LCAs) conducted yearly
- % New products undergoing Eco-design approach

We monitor also the environmental benefits and impact of the program with the execution of eco-design identified levers.

Science-based medicine and vaccines environmental assessment

The standardized Environmental Life Cycle Assessment (LCA) based on science-based EU commission recommended method (Environmental Footprint: EF 3.1) is the referent method used to quantify and optimize the environmental profile of our medicines & vaccines over their lifecycle (cradle to grave): from the extraction of materials up to the product end-of-life treatment.

At Sanofi environmental LCA relies on:

- **Multi-criteria**: LCA considers a multiplicity of environmental indicators (Climate change, water use, resource depletion, etc.) to identify best environmental improvements.
- **ISO-compliant**: we follow specifications of LCA-related standards ISO 14040 & 14044.
- **Environmental Footprint (EF) method**: Sanofi LCA referent method. It is the most robust and comprehensive LCA methodology to date available that includes 16 environmental impact indicators.

IMPACTS CATEGORIES	IMPACT CATEGORY INDICATOR
Climate change, total	Radiative forcing as global warming potential (GWP100)
Ozone depletion	Ozone Depletion Potential (ODP)
Human toxicity, cancer	Comparative Toxic Unit for humans (CTUh)
Human toxicity, noncancer	Comparative Toxic Unit for humans (CTUh)
Particulate matter	Impact on human health
Ionizing radiation, human health	Human exposure efficiency relative to U235
Photochemical ozone formation, human health	Tropospheric ozone concentration increase
Acidification	Accumulated Exceedance (AE)
Eutrophication, terrestrial	Accumulated Exceedance (AE)
Eutrophication, freshwater	Fraction of nutrients reaching freshwater end compartment (P)
Eutrophication, marine	Fraction of nutrients reaching marine end compartment (N)
Ecotoxicity, freshwater	Comparative Toxic Unit for ecosystems (CTUe)
Land use	Soil quality index24; Biotic production; Erosion resistance; Mechanical filtration; Groundwater replenishment
Water use	User deprivation potential (deprivation weighted water consumption)
Resource use, minerals and metals	Abiotic resource depletion (ADP ultimate reserves)
Resource use, fossils	Abiotic resource depletion – fossil fuels (ADP-fossil)

Figure 2 - EU Product Environmental Footprint 16 midpoint indicators

2024 Eco-design performance proof points

1. **Measurement**: Within Sanofi, we completed 27 Environmental Life Cycle Assessments (LCA), including 14 in 2024 (+130% vs. 2023):
    - **6 of our top-selling products** follow an Eco-design approach with Sanofi:
        - **Dupixent**: this LCA was conducted to assess improvement levers executed by Sanofi since 2020 in manufacturing (API manufacturing, energy and water optimization). This Eco-designed medicine has less 50% impact on climate change & less 60% on water use vs. its 2020 version (Based on an ISO-compliant LCA conducted in 2024. The LCA study was peer-reviewed by an independent panel, following ISO 14040 and 14044 standards, ensuring transparent and accurate results).
        - **Cerezyme**: this LCA was conducted to assess improvement levers executed by Sanofi since 2016 in manufacturing (API manufacturing, energy and water optimization). This Eco-designed medicine has less -80% impact on climate change & less 62% on water use vs. its 2016 version (The LCA study peer-review by an independent panel, is currently in progress).
        Environmental LCA were also executed for Apidra, Aspart, Lantus, Lispro and Soliqua medicines.
    - **8 new medicines** (still under development phase) were also assessed with a LCA to identify their key environmental drivers & respective improvement levers.
2. **Digital:** accelerating LCA execution is key for our Eco-design strategy, therefore we keep on investing in our internal Eco-design Digital intelligence (EDDi) tool to model, measure & simulate, monitor & optimize our medicines' environment profile. In April 2024, we received the certificate from Bureau Veritas, a world leader independent in certification services, attesting that Sanofi EDDi tool is compliant with ISO 14040 & ISO 14044. Today, we are also exploring Artificial intelligence (AI) use for LCA execution and ISO-LCA reports acceleration.

3. **Upskilling:** environmental knowledge and skills development of Sanofian is key for Eco-design approach integration and acceleration. To reach this objective Sanofi has developed and executed in 2024 an Eco-design transformation program with four levels according to target audience and learning objectives:
    - **Level 1:** global audience, Sanofi Eco-design approach objectives
    - **Level 2:** target audience, Sanofi Eco-design approach tools presentation
    - **Level 3:** target audience, Sanofi Eco-design approach tools application
    - **Level 4:** target audience, Sanofi Eco-design approach – LCA advance learning

By end of 2024: 3,974 Sanofi participants have been trained to various corresponding Eco-design training levels.
Complementary to these Eco-design learning levers – dedicated training webinars were organized to further focus on environmental aspects: product environmental claims, plastic pollutions, packaging and device recyclability. Still in this approach of empowering our Sanofi teams to drive meaningful changes, fostering a culture of creativity and action through the Planet Care Challenge. Every year, we invest €3 million to transform our employees' innovative ideas into concrete, impactful solutions. In 2025 Planet Care Challenge edition focuses on Eco-design.

4. **Systemic Eco-design:** to ensure our objective deploy and implement Eco-design at the core of Sanofi business ecosystem we defined specific Eco-design strategies for key departments: R&D, Manufacturing and Supply, we integrate Eco-design standards and process (HSE Eco-design management systems standard; Sustainable Packaging and Device standards, R&D product development stage gate deliverables, and in Manufacturability assessment tool to include Eco-design according to Sanofi industrial expectations Scientific and Technological Standards). Finally, we prioritized capabilities to ensure Environmental sustainability is integrated in Sanofi core functions (considering the right strategy, people, rituals, tool and process including the right upskilling).

3. More Actions

Along our medicines' value chain, we are actively working to reduce their environmental impacts by:

1. **Reducing our impact resources & optimizing** our manufacturing facilities
2. Reducing our **packaging/devices** materials consumption
3. Implementing a sustainable **supply chain**
4. Promoting a sustainable **use** of medicines
5. Reducing **waste** & boosting circularity

A. Reducing our impact on resources & optimizing our manufacturing facilities

Based on the 27 products LCAs already performed, on very different types of medicines and vaccines (synthetics, biopharmaceutical and vaccines), we could empirically observe that **API, formulation, packaging and device manufacturing** (including in scope raw material extraction & transformation up to final finish medicine) are Sanofi's product environmental drivers. Leading to the conclusion that integrating Eco-design approach in R&D at the earliest stages of designing manufacturing processes is essential.

Reducing the use of resources combined with sustainable procurement is one of our key levers to minimize the environmental profile of our medicines and vaccines. It translates firstly into an approach of reducing the consumption of resources and materials, and then selecting sustainable resource, focusing on renewable materials, secondary raw materials and in all cases materials from certified and traceable sources. Sustainable sourcing is essential to preserve natural resources, reduce the environmental footprint, and protect and promote biodiversity on sites.

Optimizing solvent consumption and selection

Most of the energy, chemical reagent, and solvent use reduction occurs during scale-up and manufacturing, rather than during the drug-research phase. Even after an active pharmaceutical ingredient is in the production phase, industrial development teams continue to optimize chemical and biochemical processes whenever possible. Solvents used in the production processes are either purchased ("consumed" quantities) or recycled at Sanofi sites or at partner company sites.

To decrease the use of non-renewable raw materials, the Sanofi focuses on three areas:

1. reduce solvents quantities used in scale-up and industrial processes,
2. recycle solvents (when possible),
3. incinerate solvents with energy recovery.

Sanofi initiated a solvent management plan in 2015 to improve solvent reporting. Thanks to this action plan, we have continually optimized quantities of solvent use. In 2023, 56% of solvents were regenerated and reintroduced into the industrial process. This avoided generating the same amount of waste. In 2 French sites based in Ambares and Tours, we created a take-back loop with the pallets of our packaging supplier, saving 2078 pallets in Ambares in 2023 vs 2022 and 2780 pallets in Tours on 1st semester of 2024 vs same period of 2023.

For more information, see in our ESG Index: Circular economy & Waste Management

From the earliest stages of product development, teams are encouraged to use the best reagents and solvents for human health and the environment. To help teams make decisions, Sanofi has developed an internal guide on the appropriate use of solvents for the design of drug-manufacturing processes: "Sanofi's solvent selection guide: a step toward more sustainable processes1," was published in November 2013 and made publicly available. An update of this guide was performed in 2024 to better assess latest Environmental; Health and Safety concerns regards solvent usage.

Change for reagents with better environmental profile

Depending on the type of chemical conversion to be carried out, the choice of reagents is often limited.

The best choices of reagents are studied during the process development stage thanks to an internal classification and quantification of our process raw materials (solvents, reagents etc.) according to their hazardous properties in which stoichiometries are optimized.

Promote catalytic transformations

We strive for implementing catalytic chemical or enzymatic transformations. For example, Palladium catalyzed Suzuki type C-C bond formation reactions are commonly used. In order to minimize our environmental impact, catalysts recycling is evaluated for new synthesis routes as the replacement of palladium by other metals (Cu, Fe etc.). More recently, based on work published in the literature, the application of different reagents for catalytic amidation on our products has been successfully tested. In 2023 we launched studies in collaboration with Boston College to identify replacements for rare earth metal catalysts used in a coupling reaction commonly found in our synthetics API manufacturing routes with an earth abundant option. Since 2023, We have launched a post-doctoral project aimed to establish a robust and versatile biocatalytic amidation platform. The primary objective is to achieve exceptional production yields exceeding 90%, while concomitantly implementing scalable, environmentally sustainable, and cost-efficient methodologies.

We lead a long-term collaboration program with universities to improve the environmental impact of synthetic routes by replacing non-sustainable biocatalysts.

[1] Prat, D., Pardigon, O., Flemming, H., Letestu, S., Ducandas, V., Isnard, P., Guntrum, E., Senac, T., Ruisseau, S., Cruciani, P. and Hosek, P. (2013). "Sanofi's solvent selection guide: a step toward more sustainable processes," in Organic Process Research and Development, 17(12), pp.1517-152. http://pubs.acs.org/doi/abs/10.1021/op4002565. The guide was a success based on its 15,408 views (reference date: March 24, 2022). An update of Sanofi's solvent guide was performed in January 2021.

Systematic Process Mass Intensity (PMI)

Complementary to LCA tool, our R&D teams use a process performance analysis tool for all its projects to guide chemists in the selection of synthetic routes, evaluate critical parameters in terms of cost and environmental performances and to identify process improvement targets. Various parameters are monitored from early stages of product throughout its industrialization. Product mass intensity (PMI), solvent & water indexes and reagents' scoring are tracked from R&D synthetic pathways to the production of active pharmaceutical ingredients (APIs) in our plants. Energy & safety work-up efficiency are also part of the monitoring to deliver a sustainable and optimized drug manufacturing process at launch.

For more information on our overall Sustainable Procurement Strategy, aligned with the UN Global Compact, see in our ESG Index the Sustainable Procurement page.

Minimizing environmental impact of our manufacturing process

Medicines are often produced using large amounts of resources to obtain small amounts of active ingredients, which corresponds to low mass efficiency. Sanofi has intensified its efforts at the development process level to implement:

- **Biosynthetic Technologies:** by shifting from the usage of rare metals catalysis, the expected positive gains are to design benign chemicals, prevent and reduce accidents, promote use of renewable feedstocks and reduce undesirable derivatives.
    - **Actions example:** inspired by nature and biomimicry, we are using innovative technologies to improve our synthesis routes; Replacement of chemical route (3 steps) by enzymatic (Ketoreductase enzyme, 1 step) for the synthesis of a key chiral building block allowed reduction of PMI (~-25%) and undesired solvent. Implementation at 2 * 30 kg (Clinical batch) demonstrated the robustness of the process.

- **Hybrid Manufacturing:** combination of small-footprint batch operations with continuous manufacturing. Hybrid manufacturing delivers Eco-design goals through process intensification. By reducing the commercial size reactors, the efficiency of mass and heat transfer is observed. Further intensification of the processes is achieved by applying of continuous manufacturing. Typical benefits include higher robustness, better selectivity resulting in a better impurity profile which simplifies the downstream processing. Holistically, hybrid manufacturing decreases the safety risks, raw material and energy use while allowing to operate under greener conditions.
    - **Actions example**: we can optimize by nearly 30% on most sustainability metrics by reducing the consumption of raw materials through increase in yield and quality, which has a direct impact on medicine environmental profiles.

- **Biotechnologies:** require fewer chemical steps thanks to processes based on fermentation with micro-organisms for the synthesis of active molecules. As fermentation processes have other environmental impacts (mainly biological chemical oxygen demand – COD - load to wastewater treatment), comparative environmental life-cycle assessments (LCA) are performed to make the best decision on the most optimized environmental technology.

    Actions example: To execute eco-design approach our biological and vaccines products portfolio, we are using a tailor-made enzyme: a new highly selective trypsin variant for insulin production increased final yield by 50% on the industrial scale. For each batch, environmental savings are: 2000 m3 purified water, 22 tons of raw materials, and 61 tons kgC02eq.

Implementation of new in vitro methods for vaccine and vaccines intermediates testing

The removal and replacement of In vivo assays for vaccines testing via strong scientific and technical expertise and successful advocacy towards regulators and pharmacopoeias (including Chinese pharmacopoeias) to ensure new assays acceptability. Key major environmental and animal welfare facts include:

- no longer use of suckling mice, mice, guinea pig, rabbit to test our new cell banks and viral seeds manufactured in raw material of animal origin free processes
- Progression on removal of in vivo assays for tetanus, pertussis, and diphtheria vaccine potency testing
- Implementation of recombinant reagent for bacterial endotoxin testing in replacement of reagent coming from Horseshoe crab (LAL reagent)
- Suppression on the rabbit pyrogens test and its replacement by new in vitro Monocyte Activation Test

- Implementation of in vitro alternative for generation of specific monoclonal antibodies and ligands for vaccine antigens characterization (no more use of mice for immunization and generation of specific antibodies)
- Global reduction of about 50 % of animal testing since 2020 in alignment with our global objective of Zero animal testing in vaccine QC by 2035

For more information on our overall Energy and Water programs, aligned with the UN Global Compact, see in our ESG Index the Climate & Water page(s).

B. Reducing our packaging / devices materials environmental impact

Packaging is crucial to ensure the quality and integrity of these products throughout the distribution chain, and pharmaceutical companies use many types of packaging for the medicines and vaccines they sell. It also contains important information for the proper use of medicines, precautions, and regulatory information. In each country, specific regulations govern packaging - for example, for the collection and recycling of packaging materials, marking and identification systems, and acceptable concentration levels of certain heavy metals in packaging (e.g. Europe, Directive 94/62/EU).

Since 2020, Sanofi has been applying an Eco-design method to packaging & devices, starting with Life Cycle Assessment (LCA) to check technical modification options influence of various environmental indicators. Furthermore in 2023 Sanofi performed an environmental assessment of its global packaging & device portfolio, the objective was to identify environmental key driver to prioritize and build its packaging and device environmental strategy.

Since 2023, Sanofi reinitiated a systematic analysis of its product packaging size, to bring further continuous improvement in the "Reduce" aspect of sustainability, with 2 major expected benefits: **Reduction of packaging material overall weight and reduction of logistics impacts**. The scope of this initiative, processes as a continuous improvement approach, is global and consists in addition numerous small changes which at the end will represent approx. 5% reduction of packaging material and logistic consumption.

Key 2024 environmental packaging and device environmental initiatives

Plastics focus:

A PVC-free initiative has been started in 2022 to reduce the use and remove when possible PVC use for secondary & tertiary packaging. Removing PVC from primary packaging (blisters to be replaced by PET, PP, PE, cardboard or paper) is under study with some providers and will be in place by 2030 for the medicines presenting the lowest level of barriers (stability).

In 2024, 55% of our syringe's vaccines are blister-free. We aim at reaching 100% by 2027 by mobilizing significant investments, internal resources as well as end-user practice change management.

Eco-design and circular economy approach are applied to Pre-Filled Safety Syringe (PFS-S) with shift to with mono material approach for all plastic from PET / PETG with 50% chemically recycled content. The metal for the spring is intended to be as well partially from recycled feedstock.

Paper & Cardboard

Efforts to reduce paper wastes by either optimizing the size of the leaflets or remove the printed leaflets from our boxes are continuous.

Eco-leaflet program: Paper and Cardboard used for packaging can contribute to deforestation as timber products. In 2022, Sanofi launched a major workstream to optimize the size of the Product Information Leaflet, with no compromise on the content and readability with the objective to reduce paper consumption.

ePI program- Leaflet Dematerialization: Starting in 2024, a cross-functional team from M&S, Regulatory, and Digital has developed a global ePI deployment program, promoting electronic Product Information (ePI) to all our stakeholders. Transitioning from printed to digital patient information improves the experience for patients and healthcare professionals by providing quicker access to updated information and more easily readable data, while also reducing our environmental footprint (estimated –60ton CO2 reduction in 2024 from paper removal). The transition to ePI-paperless solutions was successfully implemented in Japan, Australia, New Zealand, Singapore markets from 2022, followed by Malaysia and Taiwan in 2024. The year 2024 marked a significant milestone with numerous Health Authority ePI pilots emerging worldwide. More than 10 countries

have launched pilots including paper removal (most European countries, Canada, countries in Latin America such as Brazil, and in Asia). Sanofi actively participates by proposing eligible products, advancing toward digitalization and contributing to paper waste reduction.

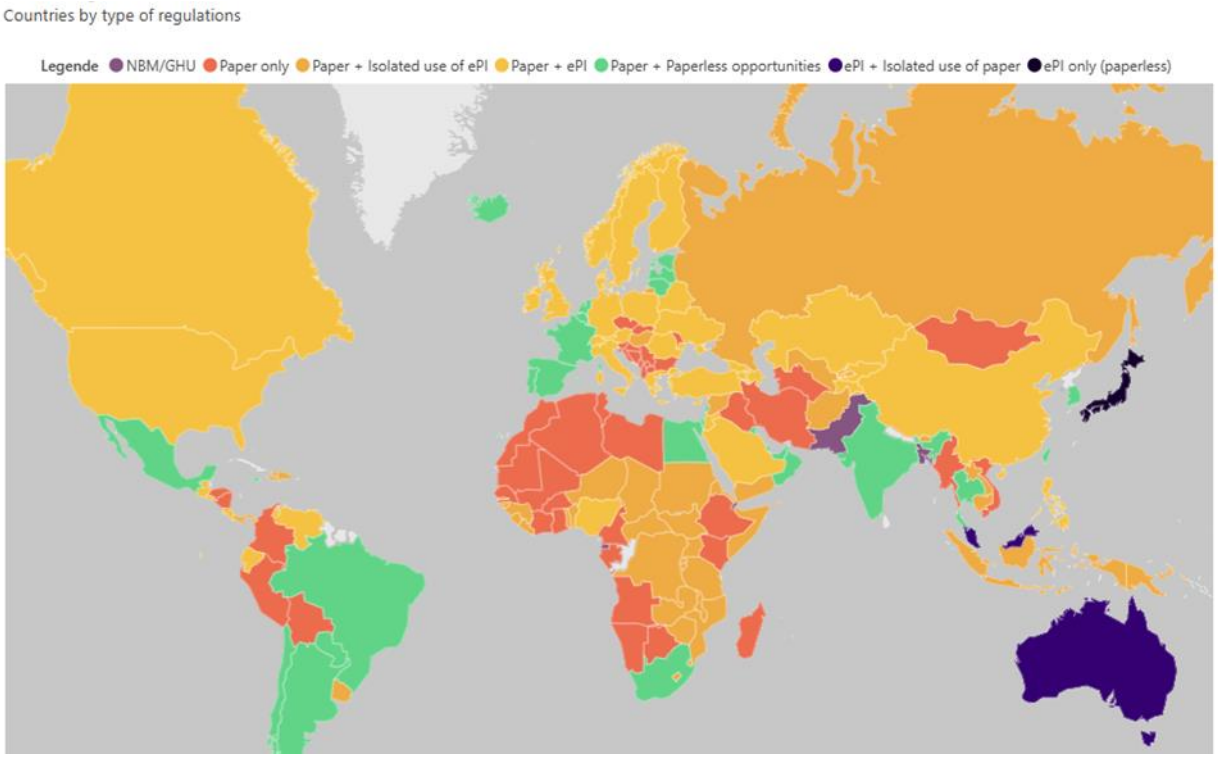

Figure 3 - eLabeling policies in the world (March 2025)

eSASL: Some tactical changes are also initiated like replacement of the Sanofi Security Label (SaSL) by a dematerialized Authentication feature (called eSaSL) required in our industrial product protection strategy to fight against falsification and illicit trafficking of our products. It reduces transport and saves material associated to the label. This initiative, already deployed at our sites in Ambarès-FR, Hangzhou-CN, Lüleburgaz-TR, Compiègne-FR, and Scoppito-IT, is under implementation within Vaccines sites.

Medical devices

Sanofi conducted intensive LCA studies on medical application devices, such as diabetes pens and autoinjectors. Thanks to these environmental assessments, and by applying the Eco-design approach, new devices are in development to reduce the weight, assembly complexity, and the number of materials which in aggregate result in a significant reduction in the overall environmental impact. TouStar Toujeo® illustrate our Eco-design commitment as first-in-class reusable pen won the Eco-design award at Pharmapack as well as the Good Design award 2022:

TouStar is the first reusable injection pen for a concentrated insulin, designed with a dedicated replaceable cartridge system.

Transportation packaging

Since 2018, a special effort has been made with three of our main CMOs (Contract Manufacturing Organizations): the optimization of pallet patterns and transportation efficiency (truck loading optimization with pallets double stacking) delivered significant reduction of transportation environmental impact: a reduction of **370 pallets (on a total of 4,500)** and 72 trucks avoided (on a total of 148) per year.

C. Implementing a sustainable supply chain

As part of Sanofi's Eco-design approach, our transportation strategy is to guarantee the continuous supply of drugs and vaccines to our patients without any disruption. To minimize its environmental footprint, Sanofi's Transportation Department has already engaged actions with the following approaches:

- Choose sea instead of air freight for long distance.
- Choose road instead of air freight for short or medium distance.
- Increase the level of occupancy for truck and sea containers.
- Develop railway transportation from Europe to China for pharma products (15/25°C & Injectables products) and within Europe.
    - Qualification in dec 24 the possibility to use Rail Shipment from France to China during all year for our 15/25°C products
    - Realization a test shipment for Vaccines products (+5°C) beg of 2025 > container arrived this morning we expected the temperature data before end of the week
- Consolidate flows and mutualize transport to reduce the number of trucks on the road.
- Develop new mode of transport as mix mode air & sea to deliver Oceania & Asia markets.
- Look for new sea shipment solutions (hybrid vessel or sailing boat)
    - We worked closely with 3 different projects (Grain de Sail, Vela, Zephyr & Borée) to develop these new solutions
- Develop alternatives solutions and green solutions
    - Implementation in July 24 pre carriage with EV Trucks for sea shipments from Val de Reuil DC
    - Implementation in Sept 24 pre carriage with B100 trucks for sea shipments from Croissy DC with different freight forwarders
    - Implementation of LNG trucks in China
    - Use of B7 diesel trucks in UK (7% biodiesel)
    - Explore usage of electrical trucks for deliveries within UAE
- Develop LCL (less than container load) solution with other pharmaceuticals companies.
- Increase the recycling & re-use of our temperatures dataloggers.
- Increase the level of occupancy for truck and sea containers.

Figure 3 – Sanofi First Electric Maritime container Haul

D. Promoting a sustainable use of medicines

At Sanofi, we promote the **sustainable use of medicines**, with 2 measures, at country level:

- First, disease **prevention** through vaccines, diabetes pre-treatment promotion and precision prescriptions which support the avoidance of waste.

- Second, **awareness** campaigns on the right way to use medicines. (eg: Australia return unwanted medicines initiative in partnership with local authorities to raise awareness on proper medicine use and disposal. To date over 600,000kgs of unwanted medicines have avoided landfill thanks to this campaign).

Opportunities and examples of sustainable use of medicines are presented in the Pharmaceuticals in the Environment factsheet in the Downstream Emissions to the Environment and Industrial Emissions to the Environment page(s).

E. Reducing waste & boosting circular economy

*This chapter is focused on Packaging & Devices waste in the **post-consumer use phase**. Operational waste are mentioned in the Circular economy & Waste Management page in our ESG Index. Pharmaceutical substances in the environment are mentioned in the Pharmaceuticals in the Environment factsheet in the Downstream Emissions to the Environment and Industrial Emissions to the Environment page(s).*

In the US, and initiative to utilize a bio-based cold chain packaging solution was used to support the initiative to avoid materials that limit the environmental impact on the quality of soil as the main waste treatment for this packaging is landfill. In 2024: 98% of Sanofi 1.4M shippers were biodegradable, 20% are in our biobased BIOFFEX material that will degredate in less than 2 years and less than 2 months and Industrial Compost, and the remaining 78% is now made of EVG, EverGreen Poly Styrene which is not biobased, but will degredate in 4 years in a landfill.

Concerned about its extended responsibility as a producer, Sanofi has launched several take-back programs for used medical devices. Focus is to collect the diabetes pens after patient use as they are made of plastic, glass, and metals. Then, we make sure that the collected pens are given a new life rather than ending up as waste. As of May 2024, the following programs are in place:

- **Denmark, RETURPEN**: Industry collaboration with Novo Nordisk, Eli Lilly, Merck, and Sanofi using pharmacies countywide for the drop-off.
- **France, RECYPEN**: Industry collaboration with Sanofi, Eli Lilly, and DASTRI using pharmacies in four pilot regions: Auvergne-Rhône-Alpes, Grand Est, Hauts-de-France and Occitanie.
- **UK, RePen**: Countrywide envelope system using postal services for sending used pens back.
- **Other take-back systems for diabetes pens are in place in Asia**: Vietnam, Philippines, Singapore, and Thailand.

F. Collaboration for greater environmental impact

At Sanofi, we know environmental sustainability progress is only possible through the collective power of our people and partners, united to take meaningful actions in a way that creates a positive ripple effect throughout communities. Here are some Global Eco-design approach initiatives which Sanofi is an active member:
Pharma LCA consortium & SMI (Sustainable Markets Initiative): Sanofi is leading the Pharma LCA Consortium that gathers global pharmaceutical companies that have come together via the Pharmaceutical Environment Group (PEG) - with the CEOs sponsorship of the Sustainable Markets Initiative (SMI) Health Task Force. Jointly, we aim to publish in 2025 a standardized LCA framework for measuring, reporting, and communicating product level environmental footprint data for the pharmaceutical sector. The LCA consortium is also assessing the opportunity to develop product inventory data sets and a tool to support the implementation.
IHI – PharmEco project: **Initiative for Health Innovation (IHI**) is a European Union public-private partnership that funds research and innovation in the health sector. In this frame, Sanofi will contribute to the PharmEco project which is dedicated to support development of innovative solutions (synthetic and biological production, sterilization / decontamination...) to make pharmaceutical manufacturing more sustainable. The project would also help on developing new methods to assess sustainability of innovation manufacturing processes at different stage of development.
NIIMBLE – National Institute for Innovation in Manufacturing Biopharmaceuticals is a public-private partnership focused on advancing biopharmaceutical manufacturing, solving industry challenges, and developing the skilled workforce to meet industry's needs. The dedicated Sustainability Workstream explore how to achieve sustainable, carbon-neutral manufacturing by incorporating sustainability as a design criterion across all areas of bioprocess manufacturing, including raw material sourcing, manufacturing technology R&D, process and facility design, manufacturing operations and waste recycling; also support the development of circular economies for raw materials and consumables using an end-to-end perspective.
American Green Chemistry Institute: Sanofi is a member of the ACS GCI Pharmaceutical Roundtable which is the leading organization dedicated to catalyzing the integration of green chemistry and engineering in the pharmaceutical industry. Established in 2005 by the American Chemical Society's Green Chemistry Institute, the Roundtable's activities are driven by the shared belief that green chemistry and engineering is imperative for business and environmental sustainability.

- Key focus areas include:
- Medicinal chemistry
- Biopharma
- Analytical chemistry
- Continuous Manufacturing
- Greener Peptides & Oligos
- Chemistry in Water
- Biocatalysis

Promoting Environmental sustainability in scientific publication and conferences

- Biotrans 2023 is the most important scientific conference (650 attendees expected from 35 countries) dealing with biocatalysis over the world. Title: Accelerating the implementation of Biocatalysis in API synthesis: Contribution to Sanofi eco-design commitment
- Green Chemistry Conference GRC Barcelona, July24-29, 2022. Title : "Journeys in Eco-designed Chemistry for Process Development" awareness of the sustainable chemistry to students during courses: Aix-Marseille University, Montpellier chemistry school (ENSCM)
- American Chemical Society Green Chemistry and Engineering Conference, June 5, 2024, Ichiishi, Naoko, "Efficient Development Approach for Continuous Flow Development of Acyl Hydrazide Formation"
- American Chemical Society Green Chemistry and Engineering Conference, June 5, 2024, Bouchet, Raphael, "Sanofi's KPPIs Tool: An Effective Tool Box for Supporting Eco-design & Cost Optimization of API"
- CBSO24-30^{e} colloque du Club de Biocatalyse en Synthèse Organique, October 7th, 2024, Rabion, Alain, Title: « Accelerating the implementation of Biocatalysis in the Sanofi Pharma portfolio: Synthetic Routes to complex chiral tetrahydrofuran Derivatives »
- Antony Bigot, Alain Rabion, Jean-Bernard Landier, Geoffrey Laronze, Frédéric Petit, Stéphanie Deprets, Jean-Marc Michot, Changxia Yuan, Fenglai Sun, Han Chen, Hou Longlei, Dalin Tang, "Chemical & Biochemical Approaches to Enantiomerically Pure 3,4 Disubstituted Tetrahydrofuran Derivative at Multi-Kilogram Scale: The Power of KRED", *Org. Process Res. Dev.* (2024) https://doi.org/10.1021/acs.oprd.4c00388
- December 2024: IABS 4th Conference on High Throughput sequencing, Frankfurt Germany "Next Generation Sequencing for Adventitious Virus Detection in Biologics for Humans and Animals" C. Logvinoff
- September 2024: A3P Switzerland congress in Laussane, "rFC implementation Strategy and endotoxin roadmap Sanofi vaccine " Thierry Bonnevay
- September 2024: Global Bio Conference, 3Rs Workshop Seoul Korea, "Global Industry Perspective on the Current Situation for 3Rs Approaches in Quality Control of Biologicals" Emmanuelle Coppens
- July 2024: IABS Webinar in collaboration with Humane Society International "Global availability of critical reagents for biologicals testing Case Study: DTaP monoclonal antibodies" Emmanuelle Coppens
- June 2024: IABS – DCVMN Regulatory WG WS, "High-Throughput Sequencing for Adventitious Virus Detection to Substitute in Vivo Test : Sanofi Vaccine's Experience" Carine Logvinoff
- March 2024: Humane Society of the United States, webinar on Transition to non-animal-based vaccine batch release testing, " Human Rabies Vaccines, Switching from in vivo to in vitro potency testing" Patrice Riou